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Montana
Basin Outlook Report
May 1, 1994

Soil
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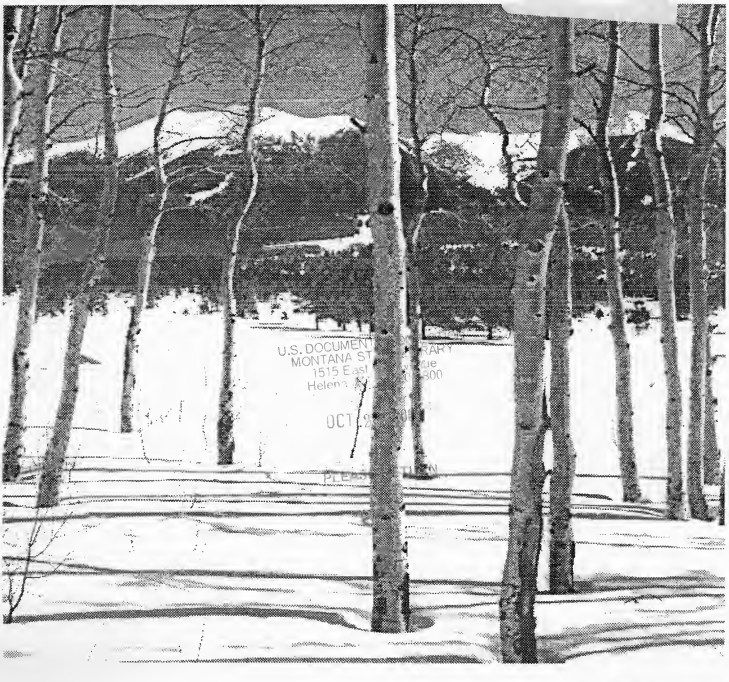

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How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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MONTANA Water Supply Outlook Report as of May 1, 1994

Montana experienced above average temperatures for several days during the middle of the month, which produced an unusual melt of the snowpack. During the last week of April, a cold front provided much needed moisture but more importantly, the colder temperatures slowed the advanced snowpack melt.

SNOWPACK

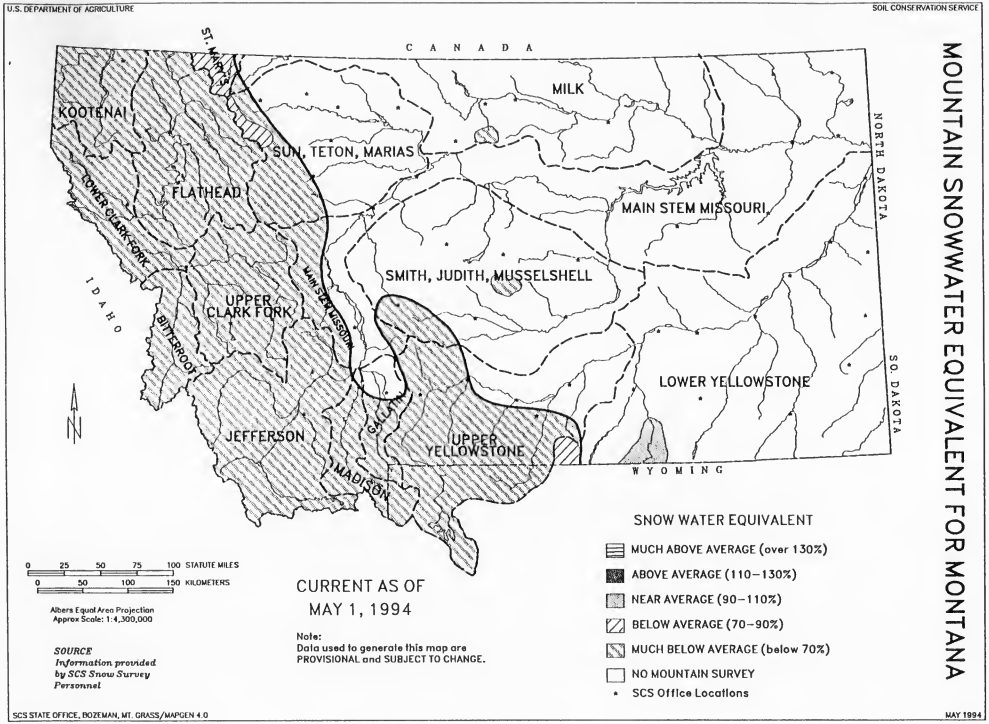
May 1 snowpack conditions in the fourteen major river basins of Montana are 42 percent below average and 34 percent below last year.

Spring snowmelt is progressing well ahead of normal due to above average temperatures near the middle of April. Snowpack melt rates during the third week of April approached those typical of mid to late May.

Snowpack extremes were in the Little Bighorn Basin where the snowpack was 6 percent below average and 13 percent above last year and in the East Side Bitterroot Basin where the snowpack was 63 percent below average and 36 percent below last year.

West of the Continental Divide, snowpacks were 46 percent below average and 31 percent below last year. East of the Continental Divide, snowpacks were 38 percent below average and 37 percent below last year.

RIVER BASIN	% OF AVERAGE	% OF LAST YEAR
COLUMBIA	54	69
KOOTENAI	55	78
FLATHEAD	60	76
UPPER CLARK FORK	51	59
BITTERROOT	42	55
LOWER CLARK FORK	49	64
MISSOURI	57	58
HEADWATERS MISSOURI	55	51
JEFFERSON	53	51
MADISON	50	44
GALLATIN	60	57
MAINSTEM MISSOURI	62	73
HELENA VALLEY	48	45
MAINSTEM ABOVE FT. BENTON	59	64
MAINSTEM ABOVE FT. PECK RES	54	65
SMITH-JUDITH-MUSSELSHELL	62	71
SUN-TETON-MARIAS	65	88
MILK	48	116
ST. MARY	77	126
YELLOWSTONE	67	71
UPPER YELLOWSTONE	65	66
LOWER YELLOWSTONE	69	75
WIND	60	63
BIGHORN	72	77
TONGUE (NORTH BIGHORN MTNS)	79	91
POWDER (SOUTH BIGHORN MTNS)	64	68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MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA
C A N A D A
ST. MARY'S
KOOTENAI
FLATHEAD
SUN, TETON, MARIAS
MILK
NORTH DAKOTA
MAIN STEM MISSOURI
LOWER CLARK FORK
MAIN STEM MISSOURI
SMITH, JUDITH, MUSSELSHELL
I D A H O
UPPER CLARK FORK
BITTERROOT
GALLATIN
LOWER YELLOWSTONE
SO. DAKOTA
JEFFERSON
MADISON
UPPER YELLOWSTONE
W Y O M I N G
0 25 50 75 100 STATUTE MILES
0 50 100 150 KILOMETERS
Albers Equal Area Projection
Approx Scale: 1:4,300,000
SOURCE
Information provided by SCS Snow Survey Personnel
CURRENT AS OF MAY 1, 1994
Note:
Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.
SNOW WATER EQUIVALENT
MUCH ABOVE AVERAGE (over 130%)
ABOVE AVERAGE (110–130%)
NEAR AVERAGE (90–110%)
BELOW AVERAGE (70–90%)
MUCH BELOW AVERAGE (below 70%)
NO MOUNTAIN SURVEY
SCS Office Locations
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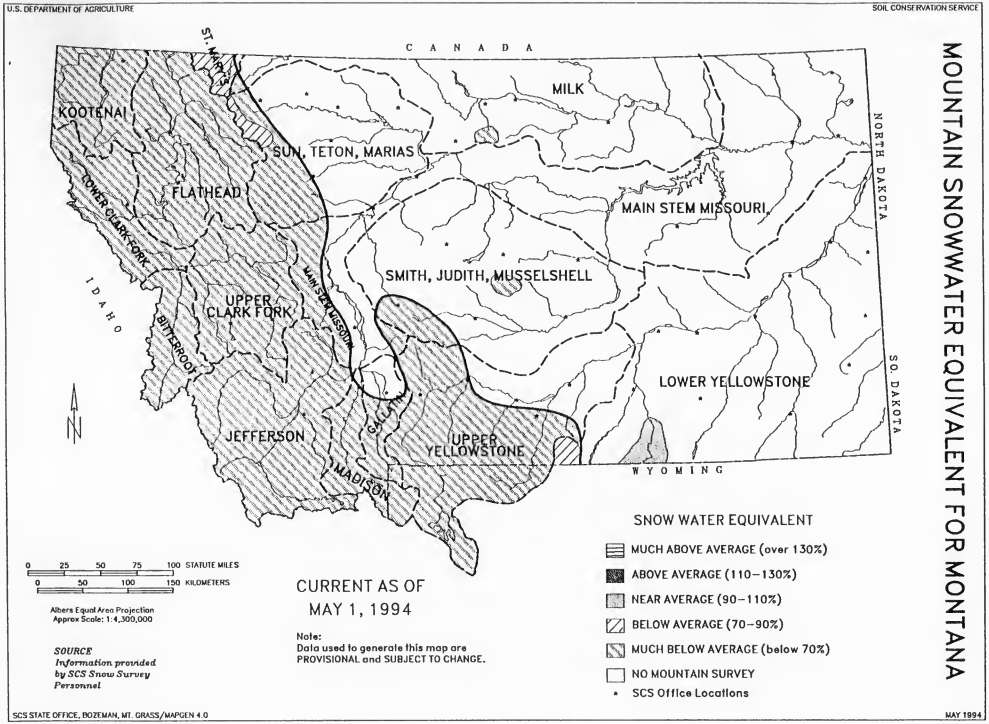
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PRECIPITATION

April mountain precipitation, for the fourteen major river basins, was at average and 22 percent below last year and water year mountain precipitation was 20 percent below average and 9 percent below last year.

West of the Continental Divide, mountain precipitation during April was 3 percent below average and 28 percent below last year. East of the Continental Divide was 1 percent above average and 19 percent below last year. Water year precipitation west of the Continental Divide was 27 percent below average and 10 percent below last year and east of the Continental Divide was 17 percent below average and 26 percent below last year.

RIVER BASIN	APRIL % OF AVERAGE	WATER YEAR % OF AVERAGE
KOOTENAI	68	71
FLATHEAD	99	76
UPPER CLARK FORK	120	75
BITTERROOT	104	73
LOWER CLARK FORK	96	68
JEFFERSON	97	74
MADISON	85	75
GALLATIN	83	72
MAINSTEM MISSOURI	131	82
SMITH-JUDITH-MUSSELSHELL	108	92
SUN-TETON-MARIAS	125	84
ST. MARY AND Milk	95	86
UPPER YELLOWSTONE	88	80
LOWER YELLOWSTONE	97	106

RESERVOIRS

Reservoir storages state-wide were 3 percent above average and 31 percent above last year.

West of the Continental Divide, reservoirs were 3 percent below average and 56 percent above last year. East of the Continental Divide, reservoirs were 12 percent above average and 10 percent above last year.

RIVER BASIN	% OF CAPACITY	% OF AVERAGE
KOOTENAI	50	119
FLATHEAD	42	75
UPPER CLARK FORK	95	120
BITTERROOT	60	100
LOWER CLARK FORK	95	153
JEFFERSON	78	117
MADISON	78	116
GALLATIN	56	119
MAINSTEM MISSOURI	78	104
SMITH-JUDITH-MUSSELSHELL	96	133
SUN-TETON-MARIAS	65	132
MILK	81	131
UPPER YELLOWSTONE	49	112
LOWER YELLOWSTONE	59	101

STREAMFLOW

Seasonal volume streamflow forecasts across Montana are 38 percent below average and 17 percent below last years forecasts.

West of the Continental Divide, streamflows are forecast to be 41 percent below average and 14 percent below last years forecasts. East of the Continental Divide, streamflows are forecast to be 36 percent below average and 18 percent below last years forecasts.

RIVER BASIN	FORECASTS % OF AVERAGE	FORECASTS % OF LAST YEAR
COLUMBIA		
KOOTENAI	72	99
FLATHEAD	70	92
UPPER CLARK FORK	51	83
BITTERROOT	46	73
LOWER CLARK FORK	56	81
MISSOURI		
JEFFERSON	40	49
MADISON	71	67
GALLATIN	65	66
MAINSTEM MISSOURI	57	66
SMITH-JUDITH-MUSSELSHELL	72	78
SUN-TETON-MARIAS	70	116
MILK	56	95
ST. MARY	70	107
YELLOWSTONE		
UPPER YELLOWSTONE	71	86
LOWER YELLOWSTONE	71	86

NOTE: The FORECAST AS % OF LAST YEAR column above, is this years forecast as a percent of last years forecast, not of what actually occurred.

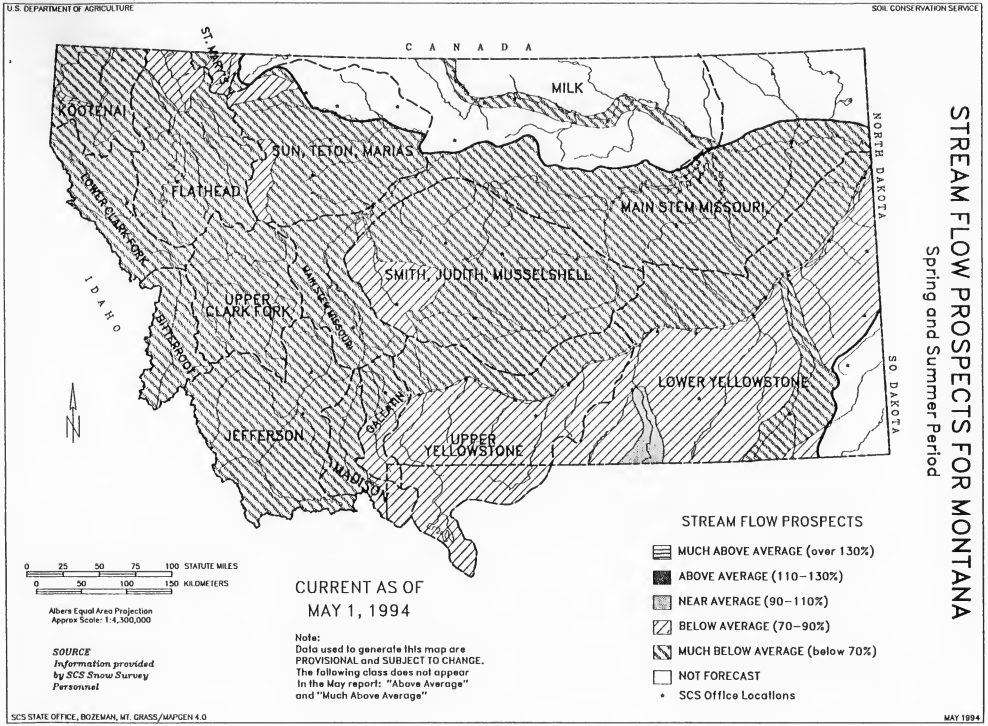
PEAK STREAMFLOW FORECASTS

Most streams west of the Continental Divide have reached their snowmelt peak flows, which occurred between April 22 and April 25,and were about half their normal peak flows. In the Missouri River Basin, east of the Divide, most streams are expected to reach their snowmelt peaks by mid May, except in the Gallatin and Yellowstone River Basins where they are expected to reach their snowmelt peaks during the third week in May.

Streamflow peak forecasts in the Columbia River Basin occurred during between April 22 through April 25, with peak flows at about 46 percent below average; the Missouri River Basin around the middle of May, with peaks 55 percent below average on the low end and 25 percent below average on the high end; and the Yellowstone River Basin during the third week of May, with peak flows 45 percent below average on the low end and 13 percent below average on the high end.

Peak streamflow forecasts for unregulated streams are as follows:

	Peak Day Range in CFS	1961-90 AVG CFS
COLUMBIA RIVER		
Blackfoot R nr Bonner	5,986*	9,072
Clark Fk R ab Missoula	9,058*	15,684
Bitterroot R nr Darby	2,300*	5,869
Clark Fk R bl Missoula	15,445*	30,257
Clark Fk R at St. Regis	20,300*	37,923
N Fk Flathead R nr Columbia Falls	9,800*	20,478
M Fk Flathead R nr West Glacier	13,200*	21,973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Spring and Summer Period
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MILK
KOOTENAI
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GRASS
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0 50 100 150 KILOMETERS
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Information provided by SCS Snow Survey Personnel
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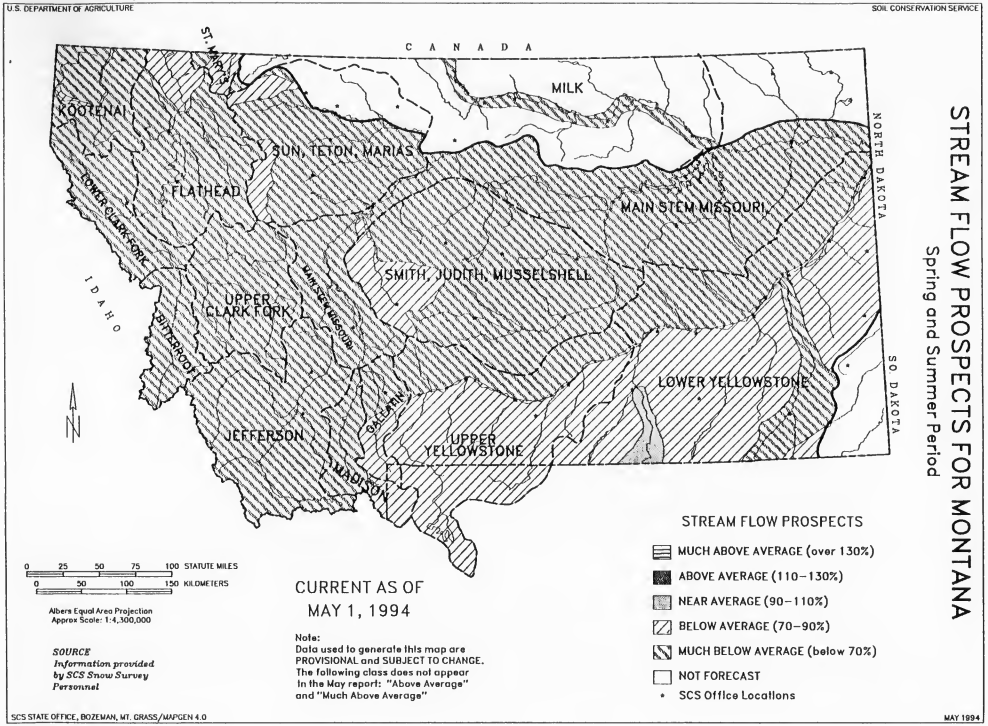
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NOT FORECAST
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MISSOURI RIVER		
Big Hole R nr Melrose	3,200 to 5,600	7,382
Ruby R ab Reservoir	250 to 650	989
Gallatin R nr Gateway	2,800 to 3,800	5,189
Gallatin R nr Logan	3,000 to 4,600	5,314
Missouri R at Toston	9,500 to 15,500	17,864
Marias R nr Shelby	2,700 to 5,400	10,282
S Fk Musselshell R ab Martinsdale	400 to 680	1,229
YELLOWSTONE RIVER		
Yellowstone R at Corwin Springs	8,500 to 13,700	16,880
Yellowstone R at Livingston	11,000 to 16,500	19,827
Boulder R nr Big Timber	3,100 to 4,700	5,035
Stillwater R nr Absarokee	3,400 to 5,800	6,307
Clarks Fk nr Belfry	4,400 to 6,800	7,466
Yellowstone R at Billings	23,000 to 36,000	40,887

NOTE: The low number in the flow range represents the maximum daily flow that would be expected to occur with little rainfall during the peak snowmelt period. The high number in the flow range could be expected with moderate amounts of rain about the same time as maximum snowmelt runoff is occurring.

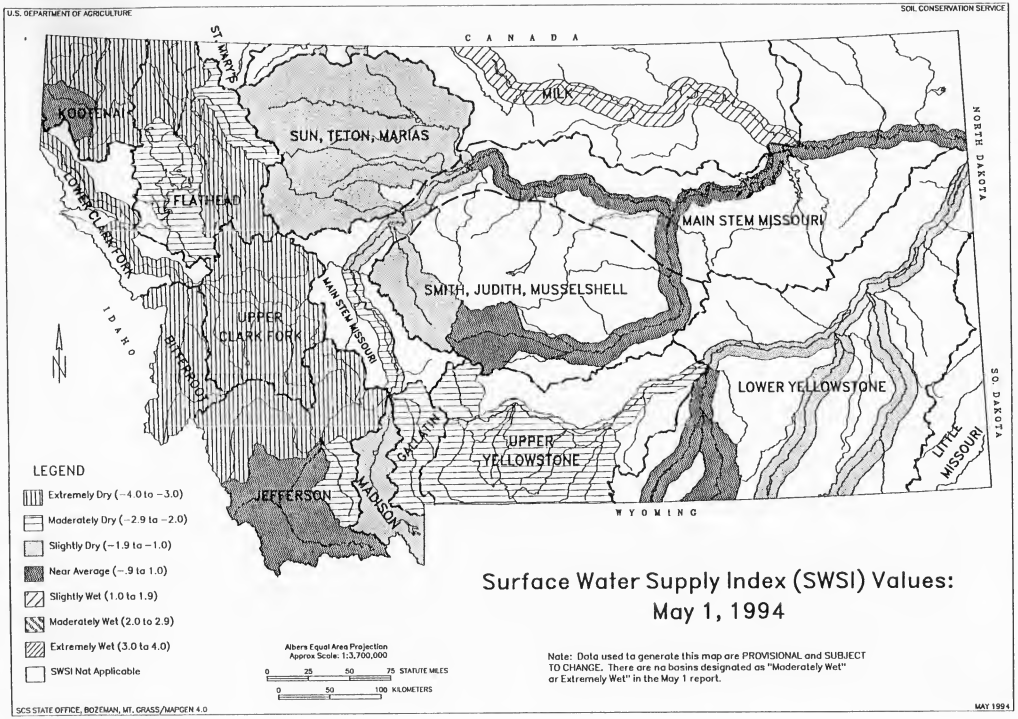
The streams labelled above with a "*" are flows based on provisional streamflow data and reached their snowmelt peaks between April 22 through April 25 at about the flows indicated.

SURFACE WATER SUPPLY INDEX

The Surface Water Supply Index (SWSI) is an indicator of surface water supply conditions for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

SWSI RATING	SURFACE WATER CONDITION
+3.0 to +4.0	Extremely Wet
+2.0 to +3.0	Moderately Wet
+1.0 to +2.0	Slightly Wet
-1.0 to +1.0	Near Average
-1.0 to -2.0	Slightly Dry
-2.0 to -3.0	Moderately Dry
-3.0 to -4.0	Extremely Dry

SWSI	Basin
-1.9	Kootenai River at Ft. Steele (Kootenai in Canada)
-3.4	Tobacco River
-3.3	Kootenai Ft. Steele to Libby Dam
-0.8	Kootenai River below Libby Dam
-3.1	Fisher River
-3.3	Yaak River
-3.3	North Fork Flathead River
-2.6	Middle FORK Flathead River
-3.5	South Fork Flathead River
-3.1	Flathead River at Columbia Falls
-3.3	Stillwater/Whitefish Rivers
-3.4	Swan River
-2.6	Flathead River at Polson
-2.5	Mission Valley
-2.5	Little Bitterroot River
-3.0	Clark Fork River above Rock Creek
-3.0	Blackfoot River
-3.0	Clark Fork River above Missoula
-3.4	Bitterroot River
-3.1	Clark Fork River below Bitterroot River
-2.7	Clark Fork River below Flathead River
-0.6	Beaverhead River
-2.3	Ruby River
-3.0	Big Hole River
-3.0	Boulder River (Jefferson)
-2.6	Jefferson River
-1.9	Madison River
-2.8	Gallatin River
-2.4	Missouri River above Canyon Ferry
-1.5	Missouri River below Canyon Ferry
-1.4	Smith River
-1.7	Sun River
-1.8	Teton River
0.9	Birch/Dupuyer Creeks
-1.2	Marias River
0.5	Musselshell River
-0.4	Missouri River above Ft. Peck
0.1	Missouri River below Ft. Peck
1.9	Milk River
-2.9	Yellowstone River above Livingston
-2.9	Shields River
-2.9	Boulder River (Yellowstone)
-2.6	Stillwater River
-2.4	Rock/Red Lodge Creeks
-2.8	Clarks Fork River
-2.9	Yellowstone River above Bighorn River
-0.8	Bighorn River below Bighorn Lake
0.3	Little Bighorn River
-1.9	Yellowstone River below Bighorn River
-1.0	Tongue River
-1.9	Powder River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CANADA
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LOWER YELLOWSTONE
S. DAKOTA
GALLATIN
UPPER YELLOWSTONE
LITTLE MISSOURI
JEFFERSON
MADISON
WYOMING
LEGEND
Extremely Dry (−4.0 to −3.0)
Moderately Dry (−2.9 to −2.0)
Slightly Dry (−1.9 to −1.0)
Near Average (−.9 to 1.0)
Slightly Wet (1.0 to 1.9)
Moderately Wet (2.0 to 2.9)
Extremely Wet (3.0 to 4.0)
SWSI Not Applicable
Albers Equal Area Projection
Approx Scale: 1:3,700,000
0 25 50 75 STATUTE MILES
0 50 100 KILOMETERS
Surface Water Supply Index (SWSI) Values:
May 1, 1994
Note: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE. There are no basins designated as "Moderately Wet" or Extremely Wet" in the May 1 report.
SCS STATE OFFICE, BOZEMAN, MT. GRASS/MAPGEN 4.0
MAY 1994

KOOTENAI RIVER BASIN in Montana as of May 1, 1994

Snowpack conditions in the Kootenai River Basin in Montana were well below average and in the Kootenai River Basin in British Columbia, Canada, were below average. Snow water content in Montana was 45 percent below average and 22 percent below last year and in British Columbia, Canada, 22 percent below average and 19 percent above last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
EAST KOOTENAI in B.C.	25	117	77
KOOTENAI MAINTSTEM in MT	16	78	55
TOBACCO	3	108	65
FISHER	5	69	50
YAAK	7	74	52
KOOTENAI in MT	16	78	55
KOOTENAI ab Bonners Ferry	41	97	66

Mountain precipitation during April was 32 percent below average and 46 percent below last year. Water year precipitation, beginning October 1, 1993, was 29 percent below average and 7 percent below last year.

Lake Koocanusa storage, on the last day of April, was 19 percent above average and 91 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
LAKE KOOCANUSA	5748.0	2874.0	1508.0	2409.0

Streamflows, for the period May through July, are forecast to be 28 percent below average and near those of last years forecasts.

KOOTENAI RIVER BASIN in Montana
Streamflow Forecasts - May 1, 1994

Forecast Pt Forecast Period	<--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
TOBACCO nr Eureka							
MAY-JUL	50	60	66	60	72	82	110
MAY-SEP	57	68	76	61	84	95	124
KOOTENAI bl Libby Dam (1,2)							
MAY-JUL	3010	3660	3960	75	4260	4910	5301
MAY-SEP	3660	4430	4780	76	5130	5900	6294

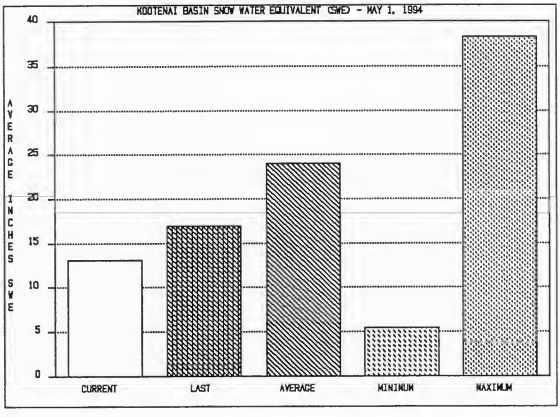
Forecast Pt Forecast Period	<--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
FISHER nr Libby							
MAY-JUL	44	58	68	42	78	92	163
MAY-SEP	54	69	79	44	89	104	179
YAAK near Troy							
MAY-JUL	135	173	198	53	225	260	372
MAY-SEP	149	188	215	55	240	280	394
KOOTENAI at Leonia (1,2)							
MAY-JUL	3320	4110	4470	72	4830	5620	6223
MAY-SEP	3950	4880	5300	73	5720	6650	7304

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -1.9 in the Kootenai River at Ft. Steele (Kootenai in Canada); -3.4 in the Tobacco River; -3.3 in the Kootenai Ft. Steele to Libby Dam; -0.8 in the Kootenai River below Libby Dam; -3.1 in the Fisher River; and -3.3 in the Yaak River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1974.

FLATHEAD RIVER BASIN as of May 1, 1994

Snowpack conditions in the Flathead River Basin were well below average. Snow water content was 40 percent below average and 24 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
NORTH FORK FLATHEAD	11	89	65
MIDDLE FORK FLATHEAD	7	101	70
SOUTH FORK FLATHEAD	7	67	57
STILLWATER-WHITEFISH	8	68	54
SWAN	9	67	63
MISSION VALLEY	5	68	64
LITTLE BITTERROOT-ASHLEY	8	19	11
JOCKO	5	65	57
FLATHEAD	41	76	60

Mountain precipitation during April was near average and 31 percent below last year. Water year precipitation, beginning October 1, 1993, was 24 percent below average and 9 percent below last year.

Reservoir storage on the last day of April was 25 percent below average and 31 percent above last year. Combined Camas reservoir storage was 11 percent below average and 16 percent above last year; the combined Mission Valley reservoir storage was 1 percent above average and 57 percent above last year; Hungry Horse storage was 41 percent below average and 34 percent above last year; and Flathead Lake storage was 7 percent above average and 27 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
CAMAS (4)	45.2	25.4	21.9	28.5
MISSION VALLEY (8)	100.0	50.0	31.9	49.7
HUNGRY HORSE	3451.0	1210.0	900.0	2043.0
FLATHEAD LAKE	1791.0	1000.0	787.0	937.2

Streamflows, for the period May through July, are forecast to be 30 percent below average and 8 percent below last years forecasts.

Peak streamflow forecasts for the North Fork Flathead River near Columbia Falls had it's snowmelt peak at about 9,800 cfs and the Middle Fork Flathead River near West Glacier at about 13,200 cfs. Provisional streamflow data indicates these streams reach their snowmelt peaks between April 22 through April 25.

Streamflow Forecasts

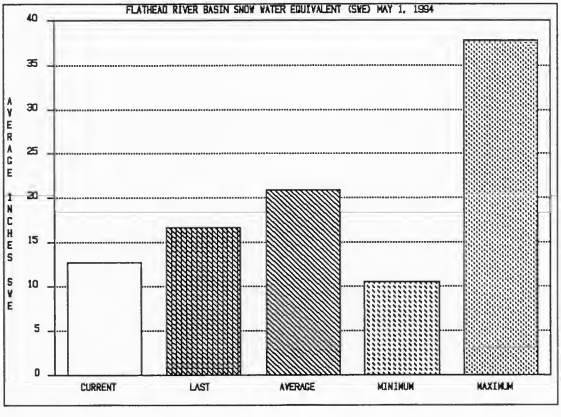
Forecast Pt / Forecast Period	<-- Drier -- Future Conditions -- Wetter --> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
NF FLATHEAD nr Columbia Falls							
MAY-JUL	900	990	1050	71	1110	1200	1474
MAY-SEP	995	1100	1170	71	1240	1340	1648
MF FLATHEAD nr West Glacier							
MAY-JUL	805	925	1006	69	1090	1210	1454
MAY-SEP	910	1040	1130	70	1220	1350	1604
SF FLATHEAD nr Columbia Fls (1,2)							
MAY-JUL	1020	1170	1240	70	1310	1460	1777
MAY-SEP	1090	1280	1360	71	1440	1630	1911
FLATHEAD at Columbia Falls (2)							
MAY-JUL	2870	3180	3390	70	3600	3910	4816
MAY-SEP	3180	3540	3780	71	4020	4380	5294
STILLWATER nr Whitefish							
MAY-JUL	76	87	95	61	103	114	155
MAY-SEP	88	101	110	63	119	132	174
WHITEFISH nr Kalispell							
MAY-JUL	47	54	59	64	64	71	92
MAY-SEP	57	63	68	65	73	79	105
SWAN nr Bigfork							
MAY-JUL	255	290	316	64	340	375	491
MAY-SEP	300	345	373	65	405	445	574
FLATHEAD nr Polson (1,2)							
MAY-JUL	3190	3700	3930	70	4160	4670	5578
MAY-SEP	3430	4070	4360	71	4650	5290	6114

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -3.3 for the North Fork Flathead River; -2.6 for the Middle Fork Flathead River; -3.5 for the South Fork Flathead River; -3.1 for the Flathead River at Columbia Falls; -3.3 for the Stillwater/Whitefish Rivers; -3.4 for the Swan River; -2.6 for the Flathead River at Polson; -2.5 for the Mission Valley; and -2.5 for the Little Bitterroot River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1992.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1972.

UPPER CLARK FORK RIVER BASIN as of May 1, 1994

Snowpack conditions in the Upper Clark Fork River Basin were well below average. Snow water content was 49 percent below average and 41 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
CLARK FORK ab FLINT CREEK	14	62	60
FLINT CREEK	7	48	43
ROCK CREEK	5	51	47
CLARK FORK ab BLACKFOOT	23	57	53
BLACKFOOT	14	60	47
UPPER CLARK FORK	34	59	51

Mountain precipitation during April was 20 percent above average and 15 percent below last year. Water year precipitation, beginning October 1, 1993, was 25 percent below average and 14 percent below last year.

Reservoir storage on the last day of April was 20 percent above average and 23 percent above last year. Georgetown Lake storage was 14 percent above average and 5 percent above last year; Lower Willow Creek storage was 55 percent above average and 31 percent above last year; and Nevada Creek storage was 24 percent above average and 94 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
GEORGETOWN LAKE	31.0	28.4	27.1	24.9
LOWER WILLOW CREEK	4.9	5.1	3.9	3.3
NEVADA CREEK	12.6	12.6	6.5	10.2

Streamflows, for the period May through July, are forecast to be 49 percent below average and 17 percent below last years forecasts.

Peak streamflow forecasts for the Blackfoot near Bonner occurred at around 5,986 cfs and the Clark Fork above Missoula at around 9,058 cfs. Provisional streamflow data indicates these streams reach their snowmelt peaks between April 22 through April 25.

Streamflow Forecasts

	<=== Drier === Future Conditions === Wetter ===>						
Forecast Pt	========== Chance of Exceeding * ==========						
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
MOULTON RES inflow (million gal.)							
MAY-JUN	22	55	77	45	99	132	172
MAY-JUL	28	64	88	45	113	149	195

Forecast Pt Forecast Period	<== Drier == 90% (1000AF)	70% (1000AF)	Future Conditions 50% (Most Prob) (1000AF)	(% AVG.)	== Wetter ==> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
			Chance of Exceeding *				
WARM SPRINGS CK at Anaconda (2)							
MAY-JUL	11.0	17.0	21	58	25	31	36
MAY-SEP	15.0	22	26	59	30	37	44
LITTLE BLACKFOOT nr Garrison							
MAY-JUL	6.0	28	44	64	60	82	69
MAY-SEP	8.0	33	49	64	66	90	76
FLINT CK nr Southern Cross (2)							
MAY-JUL	2.4	5.3	7.2	60	9.1	12.0	12.1
MAY-SEP	3.6	7.2	9.7	66	12.2	15.8	14.7
FLINT CK bl Boulder Ck							
MAY-JUL	13.0	23	30	60	37	47	50
MAY-SEP	22	35	43	65	51	64	66
LOWER WILLOW CK RES inflow							
MAY-JUL	1.0	2.7	4.5	39	6.3	8.9	11.4
MAY-SEP	1.2	3.3	5.2	42	7.1	9.8	12.3
MF ROCK CK nr Philipsburg							
MAY-JUL	18.0	25	30	48	35	42	62
MAY-SEP	22	30	35	51	40	48	69
ROCK CK nr Clinton							
MAY-JUL	88	118	139	53	160	190	264
MAY-SEP	111	144	166	55	188	220	300
NEVADA CK nr Finn							
MAY-JUL	1.9	6.1	8.9	59	11.7	15.9	15.2
MAY-SEP	2.7	7.2	10.2	60	13.2	17.7	16.9
CLEARWATER nr Clearwater							
MAY-JUL	48	61	70	53	79	92	133
MAY-SEP	50	67	78	55	90	107	142
BLACKFOOT nr Bonner							
MAY-JUL	220	295	346	48	395	470	714
MAY-SEP	280	360	410	51	460	540	805

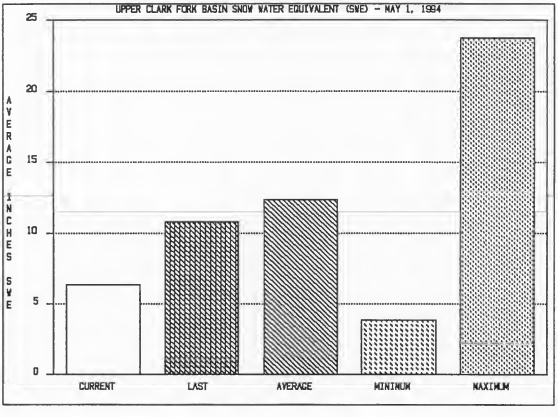
Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions — Chance of Exceeding * — 50% (Most Prob) (1000AF)	(% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
CLARK FORK ab Milltown							
MAY-JUL	93	205	280	51	355	465	549
MAY-SEP	146	265	350	54	435	555	652
CLARK FORK ab Missoula							
MAY-JUL	360	525	640	51	755	920	1263
MAY-SEP	465	640	760	52	880	1060	1457

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -3.0 for the Clark Fork River above Rock Creek; -3.0 for the Blackfoot River; and -3.0 for the Clark Fork River above Missoula.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1972.

BITTERROOT RIVER BASIN as of May 1, 1994

Snowpack conditions in the Bitterroot River Basin were well below average. Snow water content was 58 percent below average and 45 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
WEST FORK BITTERROOT	3	55	45
EAST SIDE BITTERROOT	4	44	37
WEST SIDE BITTERROOT	4	61	43
BITTERROOT	11	55	42

Mountain precipitation during April was 4 percent above average and 24 percent below last year. Water year precipitation, beginning October 1, 1993, was 27 percent below average and 12 percent below last year.

Reservoir storage, on the last day of April, was at average and 64 percent above last year. Painted Rocks Lake storage was 5 percent below average and 65 percent above last year and Como storage was 5 percent above average and 63 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
PAINTED ROCKS LAKE	31.7	19.0	11.5	20.0
COMO	34.9	21.2	13.0	20.2

Streamflows, for the period May through July, are forecast to be 54 percent below average and 17 percent below last years forecasts.

Peak streamflow forecasts for the Bitterroot near Darby occurred at around 2,300 cfs. Provisional streamflow data indicates these streams reach their snowmelt peaks between April 22 through April 25.

Streamflow Forecasts

Forecast Pt	<=== Drier ===	Future Conditions	=== Wetter ===>			
	Chance of Exceeding *					
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
WF BITTERROOT nr Conner (2)							
MAY-JUL	30	47	59	44	71	88	134
MAY-SEP	34	52	64	43	76	95	148
BITTERROOT nr Darby							
MAY-JUL	112	166	202	46	240	290	435
MAY-SEP	150	205	240	50	275	330	484

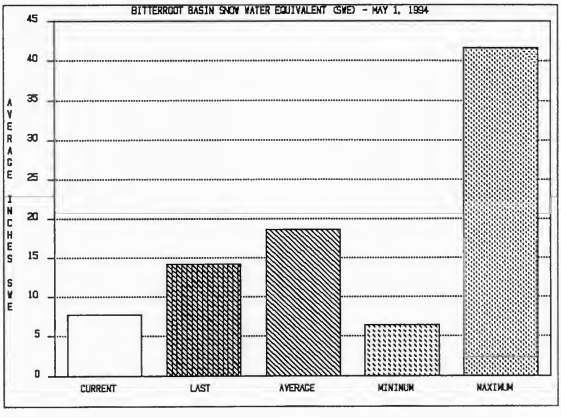
Forecast Pt Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions 50% (Most Prob) (1000AF)	(% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
	Chance of Exceeding *						
ROCK CK nr Darby (2)							
MAY-JUL	31	37	41	59	45	51	69
MAY-SEP	34	40	44	60	48	55	73
SKALKAHO CK nr Hamilton							
MAY-JUL	14.0	19.0	22	51	25	30	43
MAY-SEP	19.0	24	28	56	32	37	50
BURNT FORK CK nr Stevensville (2)							
MAY-JUL	6.0	10.0	13.0	47	16.0	20	27
MAY-SEP	9.0	14.0	17.0	52	20	25	32
BITTERROOT at Missoula							
MAY-JUL	335	450	525	46	600	715	1149
MAY-SEP	390	510	590	47	670	790	1266

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -3.4 for the Bitterroot River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1987.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1972.

LOWER CLARK FORK RIVER BASIN as of May 1, 1994

Snowpack conditions in the Lower Clark Fork River Basin were well below average. Snow water content was 51 percent below average and 36 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
UPPER CLARK FORK	34	59	51
BITTERROOT	11	55	42
LOWER CLARK FORK	13	64	48
CLARK FORK TOTAL	54	60	49
FLATHEAD	41	76	60
PEND OREILLE	90	68	54

Mountain precipitation during April was near average and 22 percent below last year. Water year precipitation, beginning October 1, 1993, was 32 percent below average and 9 percent below last year.

Noxon Rapids storage, on the last day of April, was 53 percent above average and 21 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
NOXON RAPIDS	335.0	318.8	263.5	208.7

Streamflows, for the period May through July, are forecast to be 44 percent below average and 19 percent below last years forecasts.

Peak streamflow forecasts for the Clark Fork below Missoula occurred at around 15,445 cfs and for the Clark Fork at St. Regis at around 20,300 cfs. Provisional streamflow data indicates these streams reach their snowmelt peaks between April 22 through April 25.

Streamflow Forecasts

	<=== Drier === Future Conditions === Wetter ===>						
Forecast Pt	========== Chance of Exceeding * ==========						
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
CLARK FORK ab Missoula							
MAY-JUL	360	525	640	51	755	920	1263
MAY-SEP	465	640	760	52	880	1060	1457
CLARK FORK bl Missoula							
MAY-JUL	730	990	1170	48	1350	1610	2413
MAY-SEP	890	1170	1360	50	1550	1830	2724

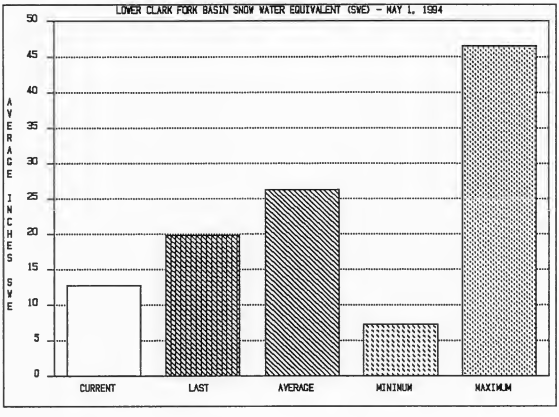
Forecast Pt Forecast Period	<--- Drier --- 90% (1000AF)	70% (1000AF)	Future Conditions 50% (Most Prob) (1000AF)	(% AVG.)	--- Wetter ---> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
	Chance of Exceeding *						
CLARK FORK at St. Regis (1)							
MAY-JUL	715	1200	1420	45	1640	2120	3152
MAY-SEP	870	1410	1660	47	1910	2450	3561
CLARK FORK nr Plains (1,2)							
MAY-JUL	3920	4970	5440	60	5910	6960	9052
MAY-SEP	4450	5610	6140	61	6670	7830	10080
THOMPSON RIVER nr Thompson Falls							
MAY-JUL	32	53	68	40	83	104	169
MAY-SEP	46	70	86	44	102	126	196
PROSPECT CREEK at Thompson Falls							
MAY-JUL	28	37	43	46	49	58	94
MAY-SEP	34	44	50	49	56	66	103
CLARK FK at Whitehorse Rpds (1,2)							
MAY-JUL	4010	5250	5820	58	6390	7630	10020
MAY-SEP	4570	5960	6590	59	7220	8610	11200

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -3.1 for the Clark Fork River below Bitterroot River and -2.7 for the Clark Fork River below Flathead River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1972.

JEFFERSON RIVER BASIN as of May 1, 1994

Snowpack conditions in the Jefferson River Basin are well below average. Snow water content was 47 percent below average and 49 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
BEAVERHEAD	15	46	53
RUBY	9	48	49
BIGHOLE	15	63	57
BOULDER	7	63	65
JEFFERSON	37	51	53

Mountain precipitation during April was near average and 36 percent below last year. Water year precipitation, beginning October 1, 1993, was 26 percent below average and 23 percent below last year.

Reservoir storage, on the last day of April, was 17 percent above average and 66 percent above last year. Lima storage was 41 percent above average and 99 percent above last year; Clark Canyon storage was 10 percent above average and 71 percent above last year; and Ruby River storage was 9 percent above average and 14 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
LIMA	84.0	77.6	39.0	55.1
CLARK CANYON	255.6	179.2	104.6	162.4
RUBY RIVER	38.8	39.5	34.8	36.3

Streamflows, for the period May through July, are forecast to be 60 percent below average and 51 percent below last years forecasts.

Peak streamflow forecasts for the Big Hole River near Melrose range from around 3,200 cfs to around 5,600 cfs and range from 57 to 24 percent below average; for Clark Canyon inflow range from around 140 cfs to around 630 cfs; and for the Ruby River above Ruby Reservoir range from around 250 cfs to around 650 cfs and range from 75 percent to 34 percent below average. Estimated dates of the peak flows are around the middle of May.

Streamflow Forecasts

	<=== Drier ===	Future Conditions	=== Wetter ===>		
Forecast Pt	========== Chance of Exceeding * ==========				
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
RED ROCK RIVER near Monida (2)						
MAY-JUL	3.0	17.0	27 38	37	51	72
MAY-SEP	6.0	17.0	28 35	40	57	80

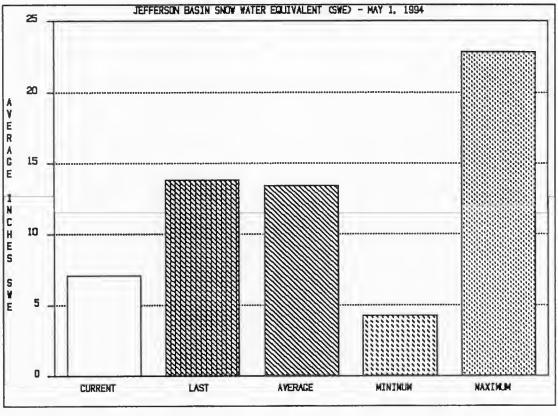
Forecast Pt Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions 50% (Most Prob) (1000AF)	(% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
			Chance of Exceeding *				
BEAVERHEAD RIVER near Grant (2)							
MAY-JUL	-9.0	4.0	17.0	18	37	68	92
MAY-SEP	-10.0	7.0	25	22	54	97	115
BEAVERHEAD RIVER at Barretts (2)							
MAY-JUL	-6.0	20	38	31	56	82	124
MAY-SEP	3.0	33	53	34	73	103	155
RUBY RIVER near Alder							
MAY-JUL	11.0	25	35	48	45	59	73
MAY-SEP	18.0	35	47	53	59	76	89
BIG HOLE RIVER near Melrose							
MAY-JUL	119	215	280	50	345	440	555
MAY-SEP	148	250	320	52	390	490	612
BOULDER RIVER near Boulder							
MAY-JUL	22	36	46	61	56	70	75
MAY-SEP	24	39	50	62	61	77	81
WILLOW CREEK near Harrison							
MAY-JUL	2.3	3.0	3.7	25	7.0	11.9	15.1
MAY-SEP	2.8	3.7	4.5	26	8.7	14.9	17.4
JEFFERSON RIVER near Three Forks (2)							
MAY-JUL	67	129	250	33	370	550	749
MAY-SEP	84	148	280	33	410	605	841

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -2.6 for the Jefferson River; -0.6 for the Beaverhead River; -2.3 for the Ruby River; -3.0 for the Big Hole River; and -3.0 for the Boulder River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1975.

MADISON RIVER BASIN as of May 1, 1994

Snowpack conditions in the Madison River Basin were well below average. Snow water content was 50 percent below average and 56 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
MADISON above HEBGEN	7	45	54
LOWER MADISON	10	43	47
MADISON	17	44	50

Mountain precipitation during April was 15 percent below average and 49 percent below last year. Water year precipitation, beginning October 1, 1993, was 25 percent below average and 29 percent below last year.

Reservoir storage, on the last day of April, was 16 percent above average and 8 percent above last year. Ennis Lake storage was 4 percent above average and 2 percent above last year and Hebgen Lake storage was 17 percent above average and 9 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
ENNIS LAKE	41.0	36.5	35.7	35.1
HEBGEN LAKE	377.5	288.4	264.0	246.1

Streamflows, for the period May through July, are forecast to be 29 percent below average and 33 percent below last years forecasts.

Peak streamflow forecasts for the inflow to Hebgen Dam range from around 2,100 cfs to around 2,900 cfs. Estimated dates of the peak flows are about the middle of May.

Streamflow Forecasts

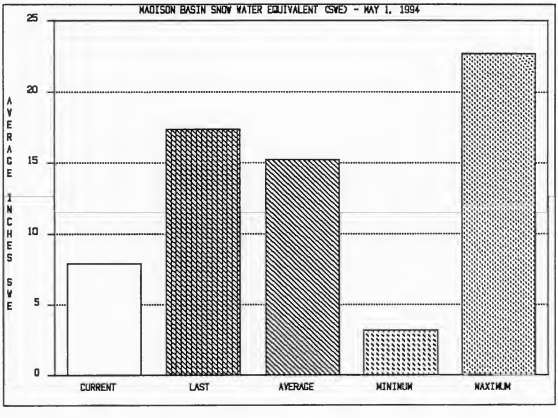
Forecast Pt Forecast Period	<-- Drier -- 90% (1000AF)	70% (1000AF)	Future Conditions -- Chance of Exceeding * -- 50% (Most Prob) (1000AF)	(% AVG.)	-- Wetter --> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
MADISON RIVER near Grayling (2)							
MAY-JUL	190	220	237	74	255	285	321
MAY-SEP	270	305	329	77	350	385	428
MADISON RIVER near McAllister (2)							
MAY-JUL	305	355	392	70	430	480	562
MAY-SEP	425	485	527	72	570	630	731

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -1.9 for the Madison River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1971.

GALLATIN RIVER BASIN as of May 1, 1994

Snowpack conditions in the Gallatin River Basin were well below average. Snow water content was 40 percent below average and 43 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
UPPER GALLATIN	9	60	63
EAST GALLATIN	6	58	59
GALLATIN	13	57	60

Mountain precipitation during April was 17 percent below average and 52 percent below last year. Water year precipitation, beginning October 1, 1993, was 28 percent below average and 28 percent below last year.

Middle Creek storage, on the last day of April, was 19 percent above average and 104 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
MIDDLE CREEK	10.2	5.7	2.8	4.8

Streamflows, for the period May through July, are forecast to be 35 percent below average and 34 percent below last years forecasts.

Peak streamflow forecasts for the Gallatin River near Gallatin Gateway range from around 2,800 cfs to around 3,800 cfs and range from 46 to 27 percent below average and for the Gallatin River near Logan range form around 3,000 cfs to around 4,600 cfs and range from 44 to 13 percent below average. Estimated dates of the peak flows are for third week in May.

Streamflow Forecasts

Forecast Pt	<== Drier ==	Future Conditions	== Wetter ==>		
	Chance of Exceeding *				
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	50% (Most Prob) (% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
GALLATIN RIVER near Gateway							
MAY-JUL	225	260	285	70	310	345	409
MAY-SEP	285	325	350	72	375	415	486
E & W HYALITE CREEK nr Bozeman (2)							
MAY-JUL	11.7	13.7	15	71	16.3	18.3	21
MAY-SEP	14.5	16.6	18	72	19.4	22	25
HYALITE CREEK near Bozeman (2)							
MAY-JUL	17.0	21	23	70	26	29	33
MAY-SEP	21	25	28	72	31	35	39

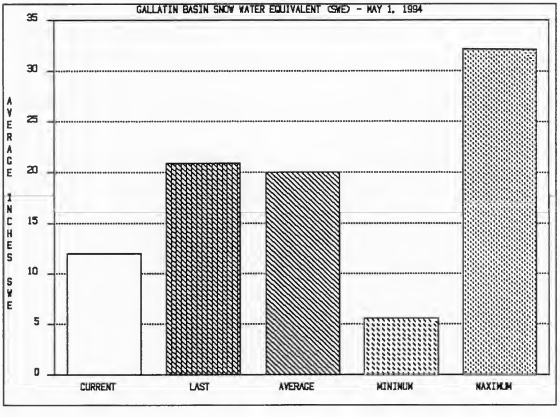
Forecast Pt Forecast Period	<== Drier == 90% (1000AF)	70% (1000AF)	Future Conditions Chance of Exceeding * 50% (Most Prob) (1000AF)	(% AVG.)	== Wetter ==> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
GALLATIN RIVER at Logan							
MAY-JUL	135	205	255	59	305	375	429
MAY-SEP	200	275	326	64	375	450	512

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -2.9 for the Gallatin River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1987.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1970.

MAINSTEM MISSOURI RIVER BASIN as of May 1, 1994

Snowpack conditions in the Mainstem Missouri River Basin were well below average. Snow water content was 38 percent below average and 27 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
MISSOURI HEADWATERS	61	51	54
WEST SIDE MISSOURI	7	45	48
SMITH-BELT	6	68	70
MAINSTEM MISSOURI	13	58	60
SUN-TETON-MARIAS	14	88	65
JUDITH-MUSSELSHELL	9	74	61
MISSOURI above FORT PECK	90	56	56
MILK RIVER	13	127	76
MISSOURI in MONTANA	100	62	58
MISSOURI blw YELLOWSTONE	169	66	62

Mountain precipitation during April was 31 percent above average and 13 percent below last year. Water year precipitation, beginning October 1, 1993, was 18 percent below average and 11 percent below last year.

Reservoir storage, on the last day of April, was 4 percent above average and 1 percent above last year. Canyon Ferry Lake storage was 4 percent above average and 1 percent above last year; Helena Valley storage was 19 percent above average and the same as last year; Lake Helena storage was 6 percent above average and 2 percent below last year; Hauser & Helena storage was 3 percent above average and 1 percent below last year; Holter Lake storage was 10 percent above average and the same as last year; and Fort Peck Lake storage was 6 percent above average and 47 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
CANYON FERRY LAKE	2043.0	1554.0	1535.0	1501.0
HELENA VALLEY	9.2	8.9	8.3	7.5
LAKE HELENA	10.4	10.7	10.9	10.1
HAUSER & HELENA	61.9	62.5	63.1	60.4
HOLTER LAKE	81.9	81.2	81.4	73.9
FORT PECK LAKE (MAF)	18.9	15.9	10.8	15.0

Streamflows, for the period May through July, are forecast to be 43 percent below average and 34 percent below last years forecasts.

Peak streamflow forecasts for the Missouri River near Toston range from around 9,500 cfs to around 15,500 cfs and range from 47 to 13 percent below average. Estimated dates of the peak flow are for the third week in May.

Streamflow Forecasts

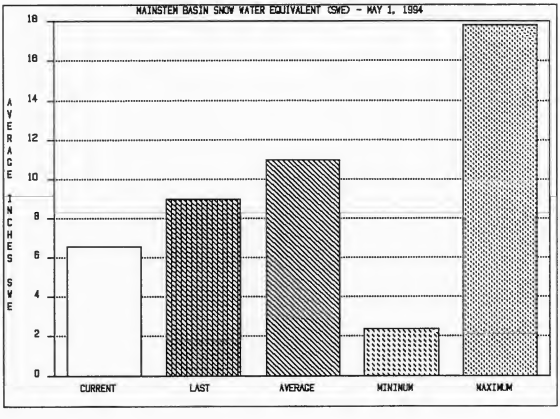
Forecast Pt Forecast Period	<== Drier == Future Conditions == Wetter ==> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
MISSOURI RIVER at Toston (2)							
MAY-JUL	520	690	970	56	1250	1660	1730
MAY-SEP	660	870	1180	57	1490	1700	2071
PRICKLY PEAR CREEK near Clancy							
MAY-JUL	5.0	7.4	12.5	63	17.6	25	20
MAY-SEP	6.0	10.0	15.0	64	21	30	24
SUN RIVER at Gibson Dam (2)							
MAY-JUL	235	300	340	77	380	445	441
MAY-SEP	275	340	385	79	430	495	489
MISSOURI RIVER at Fort Benton (2)							
MAY-JUL	270	975	1455	56	1930	2640	2597
MAY-SEP	535	1300	1820	57	2340	3100	3188
MARIAS RIVER near Shelby (2)							
MAY-JUL	130	196	240	62	285	350	387
MAY-SEP	151	215	260	61	305	370	428
MISSOURI RIVER at Virgelle (2)							
MAY-JUL	465	1240	1760	58	2280	3060	3030
MAY-SEP	705	1580	2170	59	2760	3630	3652
MISSOURI RIVER near Landusky (2)							
MAY-JUL	615	1400	1935	59	2470	3260	3279
MAY-SEP	950	1800	2380	60	2960	3810	3962
MISSOURI RIVER below Fort Peck (2)							
MAY-JUL	370	1280	1900	57	2520	3430	3327
MAY-SEP	535	1530	2200	58	2870	3860	3781
LAKE SAKAKAWEA Inflow (2)							
MAY-JUL	2450	4360	5665	69	6970	8880	8209
MAY-SEP	3390	5380	6740	70	8100	10100	9658

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -2.4 for the Missouri River above Canyon Ferry; -1.5 for the Missouri River below Canyon Ferry; -0.4 for the Missouri River above Ft. Peck; and 0.1 for the Missouri River below Ft. Peck.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1987.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1975.

SMITH-JUDITH-MUSSELSHELL RIVER BASINS as of May 1, 1994

Snowpack conditions in the Smith-Judith-Musselshell River Basins were well below average. Snow water content was 38 percent below average and 29 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SMITH-BELT	6	68	70
JUDITH-MUSSELSHELL	9	74	61

Mountain precipitation during April was 8 percent above average and 17 percent below last year. Water year precipitation, beginning October 1, 1993, was 8 percent below average and 4 percent below last year.

Reservoir storage, on the last day of April, was 33 percent above average and 13 percent above last year. Smith River storage was 26 percent above average and 74 percent above last year; Newlan storage was 44 percent above average and 31 percent above last year; Bair storage was 10 percent above average and 3 percent above last year; Martinsdale storage was 79 percent above average and 95 percent above last year; and Deadman's Basin was 24 percent above average and 7 percent below last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
SMITH RIVER	10.6	11.5	6.6	9.1
NEWLAN CREEK	12.4	12.7	9.7	8.8
BAIR	7.0	6.4	6.2	5.8
MARTINSDALE	23.1	22.2	11.4	12.4
DEADMAN'S BASIN	72.2	67.5	72.2	54.4

Streamflows, for the period May through July, are forecast to be 28 percent below average and 22 percent below last years forecasts.

Peak streamflow forecasts for the South Fork Musselshell above Martinsdale range from around 400 cfs to around 680 cfs and from 68 to 45 percent below average and for Sheep Creek near White Sulphur Springs range from around 175 cfs to around 250 cfs. Estimated dates of the peak flow are for about the middle of May.

Streamflow Forecasts

	<=== Drier ===	Future Conditions	=== Wetter ===>		
Forecast Pt	========== Chance of Exceeding * ==========				
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
SMITH RIVER near Fort Logan							
MAY-JUL	16.0	29	38	72	47	60	53
MAY-SEP	25	38	47	73	56	69	64

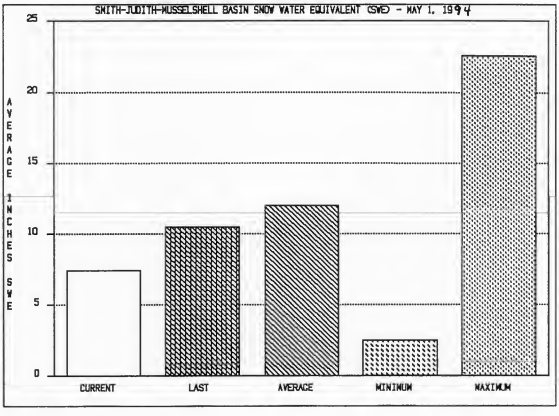
Forecast Pt Forecast Period	<-- Drier -- Future Conditions -- Wetter --> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
SHEEP CREEK nr White Sulphur Springs							
MAY-JUL	10.7	12.7	14.1	87	15.5	17.5	16.3
MAY-SEP	13.3	15.5	17.0	89	18.5	21	19.2
NF MUSSELSHELL near Delpine							
MAY-JUL	1.1	2.1	2.7	71	3.3	4.3	3.8
MAY-SEP	1.6	2.7	3.4	74	4.1	5.2	4.6
SF MUSSELSHELL abv Martinsdale							
MAY-JUL	4.0	20	31	67	42	58	46
MAY-SEP	7.0	24	35	70	46	63	50

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -1.4 for the Smith River and 0.5 for the Musselshell River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1987.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1970.

SUN-TETON-MARIAS RIVER BASINS as of May 1, 1994

Snowpack conditions in the Sun-Teton-Marias River Basins were well below average. Snow water content was 35 percent below average and 12 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SUN-TETON	9	78	57
MARIAS	6	98	71
SUN-TETON-MARIAS	14	88	65

Mountain precipitation during April was 25 percent above average and 54 percent above last year. Water year precipitation, beginning October 1, 1993, was 16 percent below average and 6 percent above last year.

Reservoir storage, on the last day of April, was 32 percent above average and 16 percent above last year. Gibson storage was 23 percent above average and 7 percent above last year; Pishkun storage was 1 percent below average and 36 percent above last year; Willow Creek storage was 26 percent above average and 31 percent above last year; Lower Two Medicine Lake storage was 38 percent above average and 2 percent above last year; Four Horns Lake storage was 3 percent above average and 4 percent below last year; Swift storage was 60 percent above average and 62 percent above last year; Lake Frances storage was 31 percent above average and 117 percent above last year; and Lake Elwell (Tiber) storage was 34 percent above average and 9 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
GIBSON	99.1	70.1	65.5	57.2
PISHKUN	32.0	25.2	18.5	25.4
WILLOW CREEK	32.2	31.1	23.8	24.6
LOWER TWO MEDICINE LAKE	11.9	12.3	12.0	8.9
FOUR HORNS LAKE	19.2	13.2	13.7	12.8
SWIFT	30.0	29.2	18.0	18.3
LAKE FRANCES	112.0	102.0	46.9	77.6
LAKE ELWELL (TIBER)	1347.0	818.5	749.8	611.4

Streamflows, for the period May through July, are forecast to be 30 percent below average and 16 percent above last years forecasts.

Peak streamflow forecasts for the Marias River near Shelby range from around 2,700 cfs to around 5,400 cfs and range from 74 to 48 percent below average and for Gibson Reservoir inflow range from around 5,200 cfs to around 6,900 cfs. Estimated dates of the peak flow are for about the middle of May.

Streamflow Forecasts

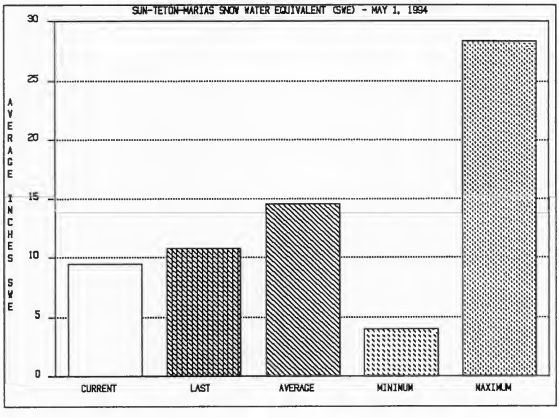
Forecast Pt / Forecast Period	<--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
SUN RIVER at Gibson Dam (2)							
MAY-JUL	235	300	340	77	380	445	441
MAY-SEP	275	340	385	79	430	495	489
TWO MEDICINE RIVER near Browning (2)							
MAY-JUL	64	101	126	67	151	188	187
MAY-SEP	75	112	137	69	162	199	200
BADGER CREEK near Browning (2)							
MAY-JUL	42	57	67	72	77	93	93
MAY-SEP	55	71	82	75	93	109	110
SWIFT RESERVOIR Inflow near Dupuyer							
MAY-JUL	25	37	45	74	53	65	61
MAY-SEP	35	48	56	77	64	77	73
DUPUYER CREEK near Valier							
MAY-JUL	1.8	4.5	9.6	73	14.7	22	13.1
MAY-SEP	2.7	5.7	11.0	73	16.3	24	15.0
CUT BANK CREEK at Cut Bank							
MAY-JUL	41	51	57	76	63	73	75
MAY-SEP	48	58	65	77	72	82	84
MARIAS RIVER near Shelby (2)							
MAY-JUL	130	196	240	62	285	350	387
MAY-SEP	151	215	260	61	305	370	428

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -1.7 for the Sun River; -1.8 for the Teton River; -1.2 for the Marias River; and 0.9 the Birch/Dupuyer Creeks.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1964-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1964-1993, OCCURRED IN WATER YEAR 1972.

ST. MARY and MILK RIVER BASINS as of May 1, 1994

Snowpack conditions in the St. Mary River Basin were below average and in the Milk River Basin were well below average. Snow water content in the St. Mary River Basin was 23 percent below average and 26 percent above last year and in the Milk River Basin was 52 percent below average and 16 percent above last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
MILK HEADWATERS	8	127	77
BEAR PAW	5	116	48
MILK RIVER	13	127	76
ST. MARY	10	126	77
ST. MARY and MILK	15	126	76
BOW RIVER in ALBERTA	16	134	92
OLDMAN RIVER in ALBERTA	4	68	63

Mountain precipitation during April was 5 percent below average and 15 percent above last year. Water year precipitation, beginning October 1, 1993, was 14 percent below average and 6 percent above last year.

Reservoir storage, on the last day of April, was 31 percent above average and 42 percent above last year. Lake Sherburne storage was 121 percent above average and 142 percent above last year; Fresno storage was 8 percent above average and 18 percent above last year; Beaver Creek storage was 44 percent above average and 6 percent above last year; and Nelson storage was 39 percent above average and 50 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
LAKE SHERBURNE	64.3	45.9	19.0	20.8
FRESNO	127.0	103.6	87.4	95.8
BEAVER CREEK	3.5	3.6	3.4	2.5
NELSON	66.8	59.2	39.5	42.7

Streamflows, for the period May through July, in the St. Mary are forecast to be 30 percent below average and 7 percent above last years forecasts and in the Milk are forecast to be 44 percent below average and 5 percent below last years forecasts.

Streamflow Forecasts

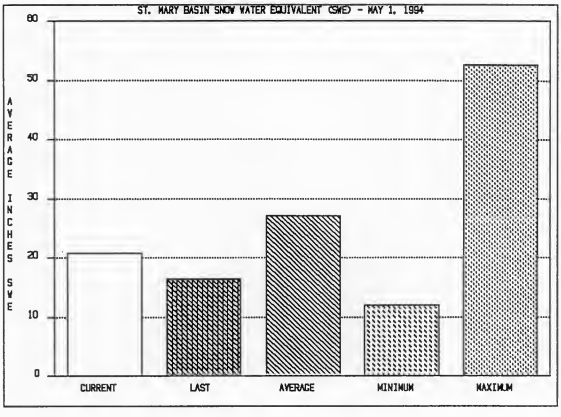
Forecast Pt / Forecast Period	<== Drier == 90% (1000AF)	70% (1000AF)	Future Conditions 50% (Most Prob) (1000AF)	(% AVG.)	== Wetter ==> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
	Chance of Exceeding *						
SWIFTCURRENT CREEK at Sherburne (2)							
MAY-JUL	58	64	68	69	72	78	98
MAY-SEP	70	78	83	72	88	96	115
ST. MARY RIVER near Babb							
MAY-JUL	230	250	262	71	275	295	371
MAY-SEP	275	300	320	73	340	365	439
MILK RIVER at Western Crossing							
MAY-JUL	2.0	8.0	13.0	50	17.0	23	25
MAY-SEP	4.0	10.0	14.0	52	18.0	24	27
MILK RIVER at Eastern Crossing							
MAY-JUL	7.0	12.0	20	56	28	41	36
MAY-SEP	9.0	19.0	26	58	33	43	45

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

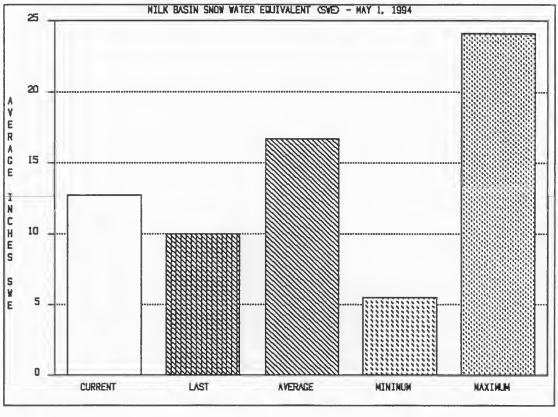
Surface Water Supply Index (SWSI) was 1.9 for the Milk River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1972.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1973-1993, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1973-1993, OCCURRED IN WATER YEAR 1975.

UPPER YELLOWSTONE RIVER BASIN as of May 1, 1994

Snowpack conditions in the Upper Yellowstone River Basin were well below average. Snow water content was 35 percent below average and 34 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
YELLOWSTONE ab LIVINGSTON	15	66	67
SHIELDS	5	45	51
BOULDER-STILLWATER	4	69	69
CLARK'S FORK-ROCK CREEK	13	79	68
UPPER YELLOWSTONE above BIGH	33	66	65

Mountain precipitation during April was 12 percent below average and 49 percent below last year. Water year precipitation, beginning October 1, 1993, was 20 percent below average and 14 percent below last year.

Reservoir storage, on the last day of April, was 12 percent above average and 6 percent below last year. Mystic Lake storage was 42 percent below average and 450 percent above last year and Cooney storage was 18 percent above average and 10 percent below last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
MYSTIC LAKE	21.0	1.1	0.2	1.9
COONEY	27.4	22.8	25.2	19.4

Streamflows, for the period May through July, are forecast to be 29 percent below average and 14 percent below last years forecasts.

Peak streamflow forecasts for the Yellowstone River at Corwin Springs range from around 8,500 cfs to around 13,700 cfs and range from 50 to 19 percent below average; the Yellowstone River at Livingston from around 11,000 cfs to around 16,500 cfs and range from 45 to 17 percent below average; the Boulder River near Big Timber from around 3,100 cfs to around 4,700 cfs and from 38 to 7 percent below average; the Stillwater River near Absarokee from around 3,400 cfs to around 5,800 cfs and range from 46 to 8 percent below average; and the Clarks Fork River near Belfry from around 4,400 cfs to around 6,800 cfs and range from 41 to 9 percent below average; and the Yellowstone River at Billings range from around 23,000 cfs to around 36,000 cfs and range from 44 to 12 percent below average. Estimated dates of the peak flows are for around the third week of May.

Streamflow Forecasts

Forecast Pt / Forecast Period	<--- Drier --- 90% (1000AF)	70% (1000AF)	Future Conditions 50% (Most Prob) (1000AF)	(% AVG.)	--- Wetter ---> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
YELLOWSTONE at Lake Outlet							
MAY-JUL	295	345	380	71	415	465	538
MAY-SEP	450	510	550	73	590	650	756
YELLOWSTONE RIVER at Corwin Springs							
MAY-JUL	955	1040	1096	72	1150	1230	1516
MAY-SEP	1160	1270	1335	72	1400	1510	1844
YELLOWSTONE RIVER near Livingston							
MAY-JUL	1050	1160	1238	71	1310	1420	1737
MAY-SEP	1290	1430	1522	72	1610	1750	2123
SHIELDS RIVER near Livingston							
MAY-JUL	41	67	85	63	103	129	134
MAY-SEP	53	81	99	66	118	145	151
BOULDER RIVER at Big Timber							
MAY-JUL	167	200	223	69	245	280	322
MAY-SEP	179	215	238	68	260	295	350
WEST ROSEBUD CREEK near Roscoe (2)							
MAY-JUL	33	39	43	72	47	53	60
MAY-SEP	46	53	57	74	62	68	77
STILLWATER RIVER nr Absarokee (2)							
MAY-JUL	255	320	360	76	405	465	474
MAY-SEP	330	395	435	76	475	540	569
CLARKS FORK RIVER near Belfry							
MAY-JUL	305	350	380	75	410	455	508
MAY-SEP	365	415	445	79	475	525	566
RED LODGE CREEK blw Cooney Res (2)							
MAY-JUL	5.0	19.0	28	74	37	51	38
MAY-SEP	16.0	29	38	78	47	60	49

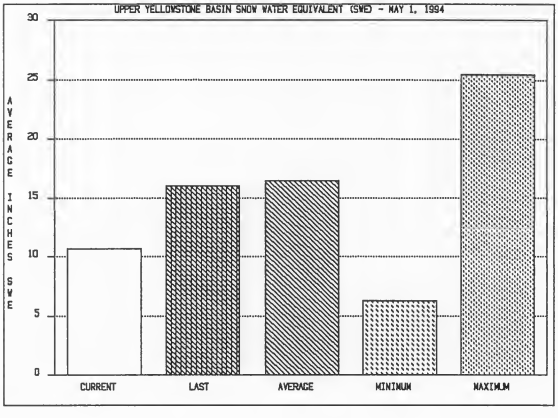
Forecast Pt Forecast Period	<--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
YELLOWSTONE RIVER at Billings (2)							
MAY-JUL	1570	2020	2322	70	2630	3070	3320
MAY-SEP	2020	2500	2827	71	3150	3640	3954

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -2.9 for the Yellowstone River above Bighorn River; -2.9 for the Yellowstone River above Livingston; -2.9 for the Shields River; -2.9 for the Boulder River; -2.6 for the Stillwater River; -2.4 for the Rock/Red Lodge Creeks; and -2.8 for the Clarks Fork River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1987.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1971.

LOWER YELLOWSTONE RIVER BASIN as of May 1, 1994

Snowpack conditions in the Lower Yellowstone River Basin were well below average. Snow water content was 31 percent below average and 25 percent below last year.

Watershed Snowpack Analysis

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
WIND RIVER (Wyoming)	17	63	59
BIGHORN RIVER (Wyoming)	20	77	72
LITTLE BIGHORN	3	113	94
TONGUE RIVER (Wyoming)	9	91	79
POWDER RIVER (Wyoming)	9	68	64
YELLOWSTONE RIVER	75	70	66

Mountain precipitation during April was near average and 21 percent below last year. Water year precipitation, beginning October 1, 1993, was 6 percent above average and 19 percent above last year.

Reservoir storage, on the last day of April, was 1 percent above average and 2 percent above last year. Bighorn Lake storage was 3 percent above average and 1 percent above last year and the Tongue River storage was 22 percent below average and 49 percent above last year.

Reservoir Storage (1000AF) End of April

Reservoir	Usable Capacity	********** Usable Storage ********** This Year	Last Year	Average
BIGHORN LAKE	1356.0	809.4	800.2	789.2
TONGUE RIVER	68.0	28.4	19.1	36.6

Streamflows, for the period May through July, are forecast to be 29 percent below average and 14 percent below last years forecasts.

Streamflow Forecasts

Forecast Pt	<=== Drier ===	Future Conditions	=== Wetter ===>			
	Chance of Exceeding *					
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
YELLOWSTONE RIVER at Billings (2)							
MAY-JUL	1570	2020	2322	70	2630	3070	3320
MAY-SEP	2020	2500	2827	71	3150	3640	3954
BIGHORN RIVER nr St. Xavier (2)							
MAY-JUL	810	1010	1140	76	1270	1470	1508
MAY-SEP	920	1120	1250	75	1380	1580	1673

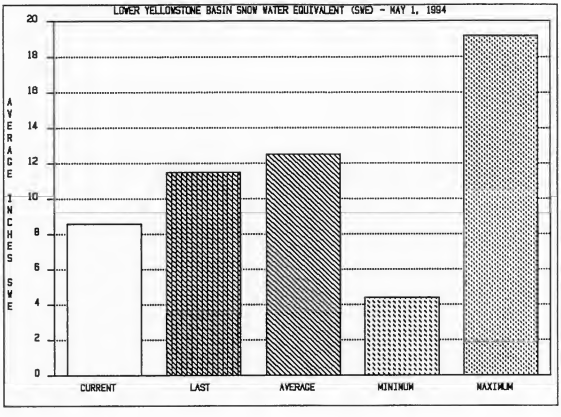
Forecast Pt / Forecast Period	<== Drier == Future Conditions == Wetter ==> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
LITTLE BIGHORN RIVER nr Hardin							
MAY-JUL	47	93	124	105	155	200	118
MAY-SEP	58	108	142	105	176	225	135
TONGUE RIVER near Decker (2)							
MAY-JUL	72	120	152	75	184	230	204
MAY-SEP	101	146	176	78	205	250	227
YELLOWSTONE RIVER at Miles City (2)							
MAY-JUL	1910	2870	3520	71	4170	5130	4957
MAY-SEP	3030	3440	4155	71	4870	5250	5835
POWDER RIVER at Moorhead							
MAY-JUL	79	105	122	67	139	165	182
MAY-SEP	85	118	140	69	162	195	204
POWDER RIVER near Locate							
MAY-JUL	86	120	143	68	166	200	211
MAY-SEP	90	132	161	69	190	230	234
YELLOWSTONE RIVER nr Sidney (2)							
MAY-JUL	1520	2860	3770	70	4680	6020	5383
MAY-SEP	2130	3490	4410	70	5330	6690	6268

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Surface Water Supply Index (SWSI) was -1.9 for the Yellowstone River below Bighorn River; -0.8 for the Bighorn River below Bighorn Lake; 0.3 for the Little Bighorn River; -1.0 for the Tongue River; and -1.9 for the Powder River.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1981.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1993, OCCURRED IN WATER YEAR 1971.

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Montana
Basin Outlook Report

Soil Conservation Service
Bozeman, MT

SOIL CONSERVATION SERVICE